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THE SALE OF FX AIRCRAFT TO TAIWAN

Janice M. Hinton

February 1982

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## THE SALE OF FX AIRCRAFT TO TAIWAN<sup>\*</sup>

### I. INTRODUCTION

In the Taiwan Relations Act of 1979, Congress mandated:

The United States will make available to Taiwan such defense articles and defense services in such quantity as may be necessary to enable Taiwan to maintain a sufficient self-defense capability.<sup>1</sup>

Within the context of this commitment and concern about the reaction of the People's Republic of China (PRC), the Reagan Administration on January 11, 1982 announced its decision to deny the Nationalist Government's request for aircraft superior to the F-5E Tiger "because no military need for such aircraft exists."<sup>2</sup> Instead, the United States granted permission to the Northrop Corporation to extend its ten-year agreement with Taiwan beyond 1983 for continued coproduction of the F-5E.

Shortly after derecognition in December 1978, the Nationalist Government repeated its request that the United States authorize the sale of the longer-range McDonnell Douglas F-4, General Dynamics F-16, or McDonnell Douglas/Northrop F-18 fighters. In January 1980, at the end of the one-year moratorium on new arms sales to Taiwan, the State Department announced that it had denied this request for improved fighters and for the *Harpoon* naval missile and the *Standard* air defense

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<sup>\*</sup>The author, Janice M. Hinton, is a graduate fellow in The Rand Graduate Institute. This paper was prepared for an RGI course, "Technology for Military Applications," given by Dr. Cullen Crain in the Fall Quarter 1981, and revised for presentation to the Conference of Ford Foundation Centers of Training and Research in International Security and Arms Control, held at The Rand Graduate Institute, January 21-22, 1982.

<sup>1</sup>Public Law 96-8, *Taiwan Relations Act*, Section 3(a).

<sup>2</sup>Gerald F. Seib, "U.S. Won't Sell Advanced Jets Taiwan Sought," *The Wall Street Journal* (January 12, 1982), p. 2 (quoting the State Department Announcement, January 11, 1982).

missile, but had approved for sale \$280 million-worth of defensive equipment such as *I-Hawk* anti-aircraft missiles, improved seaborne *Chaparral* anti-aircraft missiles, TOW anti-tank launchers and missiles, and a shipboard weapons fire-control system. President Carter also declared that U.S. arms transfer policy was consistent with the sale of intermediate fighter aircraft, developed or modified for export, to foreign countries on a case-by-case basis. He followed this decision in June with permission to Northrop and General Dynamics to conduct preliminary discussions with Taiwan, among other potential foreign customers, for sale of their FX aircraft. Northrop's model is the F-5G, an upgraded version of the F-5E, powered by a single 16,000-pound-thrust F404 engine. General Dynamics is offering its F-16/J79 with a thrust of 18,730 pounds, modified down from the capability of the F-16A, flown by the U.S. Air Force.

The U.S. Government chose among the four options of approving for sale the F-5G, the F-16/J79, more F-5E airplanes, or no aircraft. This paper will study several factors which were probably considered in making the decision: the defense needs of Taiwan in relation to some future military threat from the PRC, a comparison of the potential combat performance and costs of the two FX aircraft under consideration, and the importance of China's response to the decision.



## II. THE MILITARY THREAT TO TAIWAN

In studying the need for FX aircraft, the first consideration is the missions for which the aircraft would be used. Alternative forms of attack by the PRC, with the purpose of political reunification, which Taiwan's defense forces might face within the next ten years are a naval blockade of the island or a full-scale amphibious invasion of Taiwan. In each of these scenarios, control of the airspace over the 100-mile-wide Strait of Taiwan could be decisive in determining Taiwan's defensive capability.

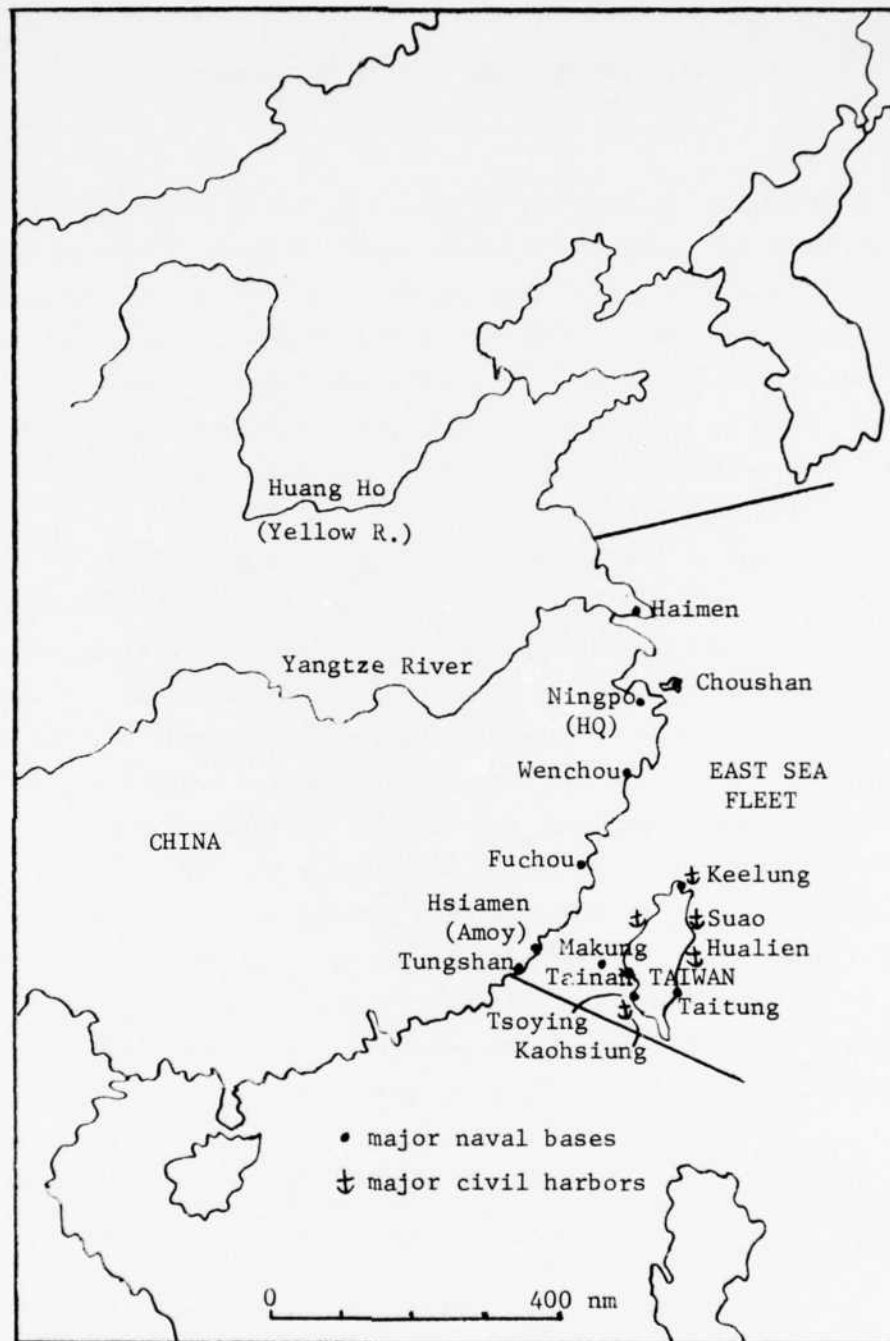
A blockade of sea travel through the Strait of Taiwan by the PRC Navy could effectively disrupt the foreign trade upon which Taiwan depends, particularly the importation of oil and raw materials necessary for the island's industries. Nearly all of Taiwan's imports and exports are transported by ship<sup>1</sup> and at least 86 percent of this cargo currently is handled at the three major ports in western and northern Taiwan--Kaohsiung, Taichung, and Keelung<sup>2</sup> (please see Map I, p. 4). The PRC could declare the Strait of Taiwan a blockade zone and enforce this declaration by interdicting the passage of ships with its East Sea Fleet. Since over 75 percent of all shipping to and from Taiwan is carried by foreign flagships<sup>3</sup> which would probably not take the risk of running the PRC blockade, Taiwan would suffer serious economic damage with the closure of its three major ports.

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<sup>1</sup>In 1979, Taiwan's harbors handled 61,889,604 tons of cargo while air freight totalled 189,591.5 tons; therefore, only .3 per cent of Taiwan's exports and imports were transported by air. (*Chinese Yearbook 1980* (Taipei: China Publishing Co., 1980), pp. 226-227.)

<sup>2</sup>In 1979, Hualien Harbor, on the east coast, handled 2,468,685 tons of cargo while Suao Harbor, just north of Hualien, was reported capable of handling 6,200,000 tons in 1981; therefore, approximately 14 percent of Taiwan's shipping could be on- and off-loaded at the two main eastern harbors which would not be affected by a blockade of the Taiwan Strait. (*Ibid.*, pp. 225-226.)

<sup>3</sup>In 1979, Republic of China (Taiwan) flagships carried 24.78 percent of the cargo handled in Taiwan's harbors. The Nationalist Government, however, has expressed in its economic development plan the goal of having its national flagships carry at least half of Taiwan's imports and exports. (*Ibid.*, p. 224.)



MAP I  
NAVAL BASES AND HARBORS  
OF CHINA'S EAST SEA FLEET AND TAIWAN

To enforce the blockade, the PRC has approximately 750 vessels already deployed at the seven major naval bases of the East Sea Fleet--Haimen, Ningpo, Choushan, Wenchou, Fuchou, Hsiamen (Amoy), and Tungshan (please see Map I, p. 4). Among these ships are probably 5 destroyers equipped with CSS-N-1 *Styx*-type surface-to-surface missiles (SSMs); 7 frigates, some carrying CSS-N-1 SSMs and possibly some with surface-to-air missiles (SAMs); 4 patrol escorts; 72 *Hola* and *Osa* missile boats with *Styx*-type SSMs; 8 *Kronshtadt* submarine chasers; 10 *Hainan* large patrol boats with 76mm and 25mm guns; 160 gunboats; 90 torpedo boats; 9 minesweepers; and several hundred coastal patrol and defense craft.<sup>4</sup> To counter this force, Taiwan possesses 2 training submarines (2 additional submarines are on order from the Netherlands); 22 destroyers armed with *Gabriel*-type SSMs and *Chaparral* SSMs; 9 frigates; 3 corvettes; 4 gunboats with *Hsiung Feng Gabriel*-type SSMs; 6 torpedo boats; and 14 minesweepers, deployed at the five naval bases of Tsoying, Makung (the Pescadores), Tainan, Keelung, and Taitung.<sup>5</sup> Given the Taiwan fleet's numerical disadvantage and inadequate electronic countermeasure equipment, defense of the Strait of Taiwan would depend upon its air force. Air superiority over the Strait would be necessary for Taiwan to attempt challenging PRC ships with its destroyers and gunboats and to attack PRC submarines with its 27 S-2A/E anti-submarine aircraft.

Taiwan's fighter force of 417 aircraft is composed of 90 F-100A/Fs, 63 F-104s, and 264 F-5A/Fs, with 59 additional F-5E and F-5F aircraft due to be delivered by the end of 1983.<sup>6</sup> The F-100, produced in the 1950s by North American, was the first supersonic fighter developed for the U.S. Air Force. Powered by a Pratt and Whitney J57-P21 turbojet engine, it can achieve a maximum speed of Mach 1.3 with the afterburner in operation. The heaviest of Taiwan's fighter aircraft, the F-100 when loaded with fuel and armament weighs approximately 28,000 pounds. The airplane can be armed with four 20mm M-39E cannon and an assortment of

<sup>4</sup>This estimate of the types and numbers of vessels now deployed by the PRC East Sea Fleet is based on information given in *The Military Balance 1980-1981* (London: IISS, 1980), pp. 61-64; *The Almanac of World Military Power* (3rd ed.) (Dunn Loring, Virginia: T. N. Dupuy Associates, 1974), pp. 276-283; *The Chinese War Machine* (New York: Crescent Books, 1979), pp. 120-121, 148-167; and the author's judgment.

<sup>5</sup>*The Military Balance 1980-1981*, op. cit., p. 67.

<sup>6</sup>*Ibid.*

up to 6000 pounds of bombs, *Sidewinder* AAMs, *Bullpup* ASMs, and air-to-air rockets on six under-wing pylons. The much faster F-104, which can attain speeds of Mach 2.2 to 2.3 at 35,000 feet, is a fighter-interceptor airplane armed with 20mm M-61 *Vulcan* cannon and two *Sidewinder* AAMs with provision for two additional *Sidewinder* AAMs on pylons under the fuselage. The F-104 is powered by a General Electric J79 turbojet engine with afterburner, the engine General Dynamics proposes to install in its FX aircraft for possible sale to Taiwan. The backbone of Taiwan's fighter force, however, is the F-5 series designed by Northrop and coproduced with Taiwan since 1973 at the Aero Industrial Development Center (AIDC) in Taichung. Specific performance records for each aircraft in the F-5 series, A through F, and for the F-100 and F-104 aircraft can be found in Chart I (p. 7); overall, the F-5, powered by two General Electric J85 engines, can achieve a maximum speed of approximately Mach 1.5 at 36,000 feet when carrying less than the maximum load of fuel and armament. The airplane carries two *Sidewinder* AAMs, two 20mm guns, and up to 7000 pounds of mixed ordnance which can include bombs, AAMs, ASMs, and air-to-surface rockets.

Across the Taiwan Strait, the PRC possesses approximately 4400 fighter aircraft in the People's Liberation Army (PLA) Air Force with an additional 600 land-based fighters flown by the PLA Navy.<sup>7</sup> Not all of these aircraft, however, would be deployed in air-to-air combat with Taiwan's Air Force to protect PLA ships and submarines blockading the Strait. Although there have been no serious military conflicts between China and the Soviet Union along their 4500-mile common border since the 1969 Chenpao (Damansky) Island incident, the Soviet Union continues to post approximately 51 divisions along the border equipped with T-72 tanks, helicopters, surface-to-air missiles, *Backfire* bombers, and SS-20 medium-range ballistic missiles (MRBMs) which threaten China's northern industrial base, its capital at Peking, and its strategic missile forces in

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<sup>7</sup>These numbers are from *The Military Balance 1980-1981*, op. cit., pp. 61-64. The estimates of types and numbers of aircraft which would be used against Taiwan as part of a naval blockade or a full-scale invasion of the island are based on this and information given in *The Almanac of World Military Power*, op. cit., pp. 276-283; *The Chinese War Machine*, op. cit., pp. 114-147; Harlan W. Jencks, "China's 'Punitive' War on Vietnam: A Military Assessment," *Asian Survey* (August 1979), pp. 807-809 and the author's judgment.

CHART I

TAIWAN'S AIRCRAFT

| AIRCRAFT | TOTAL | MAX SPEED                           | MAX RATE OF CLIMB                                 | SERVICE CEILING  | COMBAT RADIUS                                   | NORMAL TAKE-OFF WEIGHT                | ENGINE   | ARMAMENT   |
|----------|-------|-------------------------------------|---|------------------|---|---------------------------------------|--|--|
| F-100A/F | 90    | Mach 1.3                            | ---<br>(Take-off run with after-burner: 4500 ft.) | over 50,000 feet | 570 miles                                       | 28,000 pounds                         | 1 Pratt and Whitney J57-P21 turbojet with after-burner | 6 under-wing pylons for:<br>a) 6000 lbs. of bombs<br>b) <i>Sidewinder</i> AAMs<br>c) <i>Bullup</i> ASMs, or<br>d) air-to-air rockets<br>4 20mm M-39E cannon    |
| F-104    | 63    | Mach 2.2 to 2.3<br>(at 35,000 feet) | ---   | ---              | ---<br>(Ferrying distance of 1,100 miles)       | 17,000-19,200 pounds (with tip-tanks) | 1 General Electric J79-GE7 axial-flow turbojet         | 2 GAR-8 <i>Sidewinder</i> AAMs<br>20mm M-61 <i>Vulcan</i> cannon<br>provision for 2 extra <i>Sidewinder</i> AAMs under fuselage                                |
| F-5A/F   | 264   | Mach 1.4<br>(36,000 ft.)            | 28,000 ft/min                                     | 50,000 feet      | 190 miles (max payload)<br>560 miles (max fuel) | (max)<br>20,700 pounds                | 2 General Electric J85-GE13 turbojets                  | 2 <i>Sidewinder</i> AAMs<br>2 20mm guns<br>5 pylons for 2000 pounds of bombs, plus:<br>a) 4 AAMs,<br>b) <i>Bullup</i> ASMs, or<br>c) 20 air-to-surface rockets |
| A        | 65    | Mach 1.3<br>(36,000 ft.)            | 30,400 ft/min                                     | 52,000 feet      | 200 miles (max payload)<br>570 miles (max fuel) | (max)<br>20,500 pounds                |  |  |
| B        | 10    | Mach 1.3<br>(36,000 ft.)            | 30,400 ft/min                                     | 52,000 feet      | 550 miles (hi-lo-hi mission)                    | (combat)<br>13,350 pounds             | 2 General Electric J85-GE21A turbojets                 | 2 ALM-9 <i>Sidewinder</i> AAMs<br>2 M-39A2 20mm cannon<br>up to 7000 pounds mixed ordnance   |
| E        | 162   | Mach 1.6<br>(36,000 ft.)            | 34,500 ft/min                                     | 52,000 feet      | 520 miles (hi-lo-hi mission)                    | (combat)<br>14,050 pounds             |  |  |
| F        | 27    | Mach 1.5<br>(36,000 ft.)            | 32,900 ft/min                                     | 51,000 feet      |   |                                       |  |  |

Sinkiang Province. As long as China continues to perceive the threat of attack and possible invasion by the Soviet Union, the PRC Government will be unwilling to redeploy the forces, including the air divisions, currently stationed in the Shenyang, Peking, Lanchou, and Sinkiang Military Regions in northern China. Only those aircraft normally deployed at air bases in the Fuchou, Canton, Wuhan, and Nanking Military Regions in southeastern China would probably be used in combat against Taiwanese aircraft defending the Strait. Based upon estimates of the number and type of aircraft already stationed or brought to the Canton Military Region shortly before China's attack against Vietnam on February 17, 1979--none of which was committed against Vietnamese forces--between 700 and 1000 aircraft would probably face Taiwan's 417 fighters. The PRC force would likely be composed of approximately 50 F-2s (MiG-15s), 375 F-4s (MiG-17s), 375 F-6s (MiG-19s), 30 F-6bis (a MiG-19 derivative also known as the *Fantam* A or the F-9), and 20 F-7s (MiG-21s). The F-2s are old aircraft, slow and poorly armed for combat against supersonic fighters equipped with infrared-guided *Sidewinder* AAMs. Powered by a centrifugal-flow turbojet engine, the F-2 can achieve a maximum speed of just Mach 1 and is armed with two 23mm cannons, one 37mm cannon, and air-to-air rockets. Due to the large numbers produced, the PRC would rely upon its F-4s and F-6s to provide air cover for its ships in the Taiwan Strait. The F-4 carries armament similar to that found on the F-2: two 23mm cannons plus one 37mm cannon or three 23mm cannons, and two air-to-air rockets. In addition, this airplane travels no faster than the F-2, achieving a maximum speed of Mach .971. The F-6 is a supersonic fighter, with a maximum speed of Mach 1.4, powered by two turbojet engines with afterburners. It is equipped with two CAA-1 *Atoll*-type AAMs, two to three 30mm cannons, and the *Izumnud* airborne interception radar. The F-6bis is a derivative of the Soviet Union's MiG-19, as is the F-6, and reportedly can achieve higher maximum speeds than the F-6 with estimates varying between Mach 1.56 and Mach 2. The basic difference in design is a longer forward fuselage, terminating in a conical nose radome, which might contain advanced radar equipment comparable

to the Soviet R2L *High Fix B* radar found in the MiG-21.<sup>8</sup> The F-7, based on the MiG-21s delivered to China in 1960 shortly before the end of Soviet aid and on later models received from North Vietnam, can reach a speed of Mach 2.1 at an altitude above 36,000 feet and has the longest range of any aircraft in China's current fighter force with a combat radius of 680 miles. Its armament is probably similar to that found on the F-6 and the F-6bis. Specific performance records for each of these fighter aircraft can be found in Chart II (p. 10). An advanced fighter, the F-12, which is to be powered by domestically produced Rolls Royce *Spey* turbofan engines and is intended to attain a maximum speed of Mach 2.4, is reportedly under development in China. This aircraft will not threaten Taiwan's Air Force for at least a decade; however, its future existence should be taken into account in an evaluation of Taiwan's defense needs.

As estimated above, in air-to-air combat over the Strait of Taiwan, 850 PRC fighter aircraft would likely be pitted against 417 Taiwanese fighters, giving the PRC a two-to-one numerical advantage. If Taiwan's aircraft and pilots are substantially superior to their PRC counterparts, this quantitative difference may not be decisive. However, if the two sides are fairly evenly matched, this 2 to 1 ratio in fleet size could be enough to assure the PRC air superiority over the Strait. In earlier air battles between the PRC and Taiwan, in 1958 and 1964, Taiwan's Air Force<sup>9</sup> achieved kill-ratios of 8 to 1<sup>9</sup> and 14 to 1,<sup>10</sup> respectively. In the 1964 battle, Taiwan's F-86s and F-100s, equipped with *Sidewinder* AAMs and flown by better-trained pilots, successfully challenged the PRC's F-4s

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<sup>8</sup>Most *Fantán* A (F-6bis) airplanes are thought to be designed for the ground attack mode and are probably not all-weather craft; however, fighter prototypes exist which may contain all-weather radar equipment. This paper is concerned with the *Fantán* As, already in existence or to be produced in the near future, which are designed and equipped for air-to-air combat. For clarity, these aircraft will be called the F-6bis and the name *Fantán* A will be reserved for ground attack aircraft. (Information provided by Harlan Jencks, Center for Chinese Studies, University of California, Berkeley).

<sup>9</sup>Ralph N. Clough, *Island China*, Cambridge, Massachusetts: Harvard University Press, 1978, p. 108.

<sup>10</sup>Wang Chi-wu, "Military Preparedness and Security Needs: Perceptions From the Republic of China on Taiwan," *Asian Survey*, June 1981, p. 656.

CHART II  
CHINA'S AIRCRAFT

| AIRCRAFT   | TOTAL<br>(BLOCKADE)<br>(INVASION)       | MAX<br>SPEED    | MAX RATE<br>OF CLIMB          | SERVICE<br>CEILING | COMBAT<br>RADIUS  | NORMAL<br>TAKE-OFF<br>WEIGHT | ENGINE   | ARMAMENT   |
|--|---|-----------------|-------------------------------|--------------------|---|------------------------------|--|--|
| F-2<br>(MiG-15)  | 200<br>(50)<br>(70)                     | Mach 1.0        | 10,400<br>ft/min<br>(initial) | 51,000<br>feet     | ---   | 11,270<br>pounds             | 1 RD-45<br>centrifugal<br>flow<br>turbojet   | 2 NS 23mm cannon<br>1 37mm Nudelmann cannon<br>air-to-air rockets  |
| F-4<br>(MiG-17)  | 1500-<br>2000<br>(375)<br>(500-<br>700) | Mach .97        | 10,500<br>ft/min              | 57,100<br>feet     | 250<br>miles<br>(with<br>external<br>tanks:<br>580 miles) | 13,200<br>pounds             | 1 VK-1A<br>turbojet  | 2 23mm Nudelmann-Rikter<br>VYa cannon<br>1 37mm NS-2 cannon<br>(or 3 23mm cannon)  |
| F-6<br>(MiG-19)  | 1500<br>(375)<br>(500)                  | Mach 1.4        | 22,600<br>ft/min              | 58,700<br>feet     | 430<br>miles  | 16,750<br>pounds             | 2 turbo-<br>jets<br>(Shenyang<br>derivative<br>of Tumansky<br>R-9BF with<br>after-<br>burners) | 2 CAA-1 (Atoll-type) AAMs or:<br>a) bomb up to 500 pounds,<br>b) 212mm caliber rocket,<br>c) 8 air-to-air rockets<br>2 or 3 30mm NR-30 cannon<br>Avionics: <del>Tumansky</del> air-borne<br>interception radar |
| F-6bis<br>(Fartan A<br>or F-9)<br>(MiG-19<br>derivative) | 210<br>(30)<br>(70)                     | up to<br>Mach 2 | ---                           | 52,500<br>feet     | 500<br>miles  | (max)<br>23,590<br>pounds    | 2 turbo-<br>jets<br>R-980811<br>type<br>(may be<br>unchanged<br>from F-6)                      | 2 CAA-1 AAMs, or<br>4 pods each with 8 57mm<br>air-to-surface rockets, or<br>2 500 kg. bombs, or<br>4 250 kg. bombs<br>2 30mm NR-30 cannon<br>Avionics: possibly Soviet<br>R2L High Fix B radar                |
| F-7<br>(MiG-21)  | 80-100<br>(20)<br>(30)                  | Mach 2.1        | ---                           | 50,000<br>feet     | 680<br>miles  | ---                          | ---  | ---  |

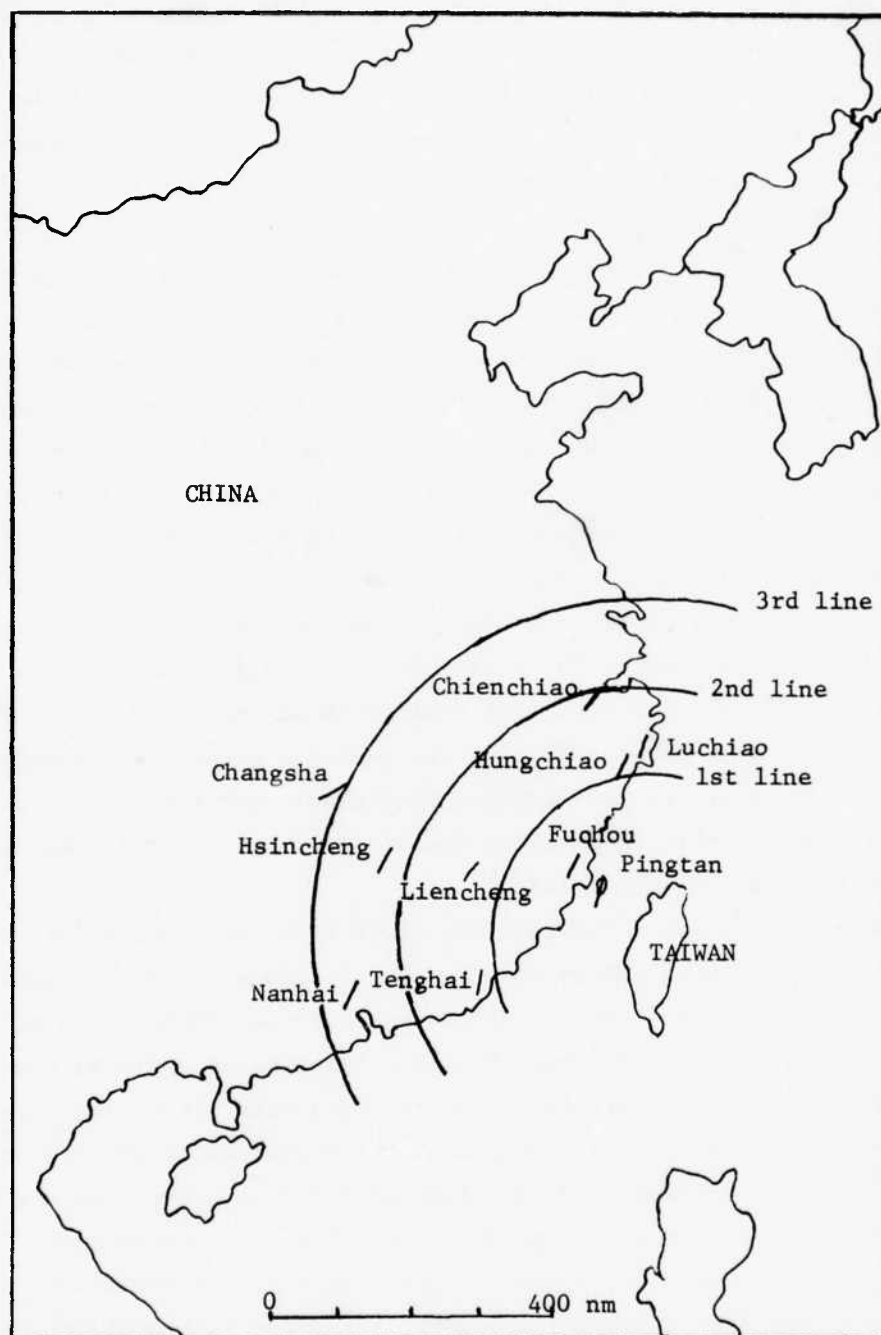


and F-6s, which were armed only with 23mm and 30mm cannons since China had not yet developed its *Atoll*-type AAMs.<sup>11</sup> Now that the F-6s are equipped with air-to-air missiles, the data given in Charts I and II show the F-6 and the F-6bis to be comparable in combat performance to Taiwan's F-5 aircraft when the latter are armed with only two *Sidewinder* AAMs each. Both series of aircraft are powered by two turbojet engines with afterburners which yield maximum speeds of approximately Mach 1.5, and, when carrying a maximum load of fuel and armament, weigh between 23,000 and 25,000 pounds which would indicate comparable maneuverability, other factors being equal. The F-5E design, however, has incorporated full-span leading-edge flaps onto its wings with the conventional trailing-edge flaps which probably give this aircraft a slight maneuverability edge over the F-6 and F-6bis which have only hydraulically-powered conventional trailing-edge flaps. The avionics system of the clear-weather F-5Es and F-5Fs is superior to that of the F-6 with its 1950s *Izumnud* radar equipment. The F-6bis is reportedly an all-weather version of the F-6, fitted with equipment similar to the Soviet R2L *High Fix B* radar. This difference could give the F-6bis a significant advantage, given the frequency of poor-weather conditions over the Strait of Taiwan; however, this information remains speculative until photographic or on-site evidence is provided.

Comparing Taiwan's F-5s and the PRC's F-6s, and taking into account better pilot training and avionics in the island's air force, Taiwan's aircraft would probably have a slight performance advantage in air-to-air combat with their PRC counterparts. This advantage is markedly enhanced when Taiwan's airplanes are equipped with the maximum load of air-to-air missiles. Although the PRC overall would probably enjoy at least a 2 to 1 fleet-size advantage over Taiwan, comparing similar aircraft reduces this advantage to about 1.5 to 1. Furthermore, if Taiwan's F-5 aircraft carry the maximum number of six *Sidewinder* AAMs for a total of 1584 AAMs, while the PRC's F-6 and F-6bis aircraft are armed only with two CAA-1 AAMs each or 810 AAMs altogether, Taiwan has an armament advantage of 1.95 to 1. Including all *Sidewinder* AAMs

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<sup>11</sup> Ibid. The CAA-1 AAM was developed by China in the mid-1970s.



MAP II  
FRONT-LINE PRC AIR BASES

which can be carried by the F-100s and F-104s, in addition to the F-5s, this numerical armament advantage rises to nearly 3 to 1, with 2376 *Sidewinder* AAMs on Taiwan's side. China's aircraft taking off from front-line air bases in Fukien, Canton, and Chekiang Provinces would be traveling an average of 200 miles to battle Taiwanese aircraft flying much closer to base (please see Map II, p. 12). Due to the short distance Taiwan's airplanes would have to fly to engage in air-to-air combat over the Strait, in a fuel-payload tradeoff the aircraft could be loaded with the maximum number of air-to-air missiles and still challenge the performance ability of the fuel-heavy PRC aircraft. If Taiwan has enough *Sidewinder* AAMs to do so, this armament advantage of 3 to 1, rather than China's 2 to 1 advantage in fleet size, may prove decisive and assure Taiwan of air superiority over the Strait. Unclassified sources, however, do not reveal the number of *Sidewinder* AAMs currently in Taiwan's inventory; therefore, the ability of one side to attain air superiority cannot be determined in advance with certainty. For example, conjecturing that there are only 834 AAMs in Taiwan's stock--or two per aircraft--the two sides would be fairly evenly matched in air-to-air combat. If U.S. policy calls for maintaining rough equivalence in the air capabilities of Taiwan and the PRC, given this naval blockade/air superiority over the Strait scenario, evidence of Taiwan's need for improved fighter aircraft is inconclusive. However, if the PRC continues production of its higher performance aircraft, the F-6bis and the F-7,<sup>12</sup> and successfully develops its advanced fighter, the F-12, parity could disappear. Taiwan would then need substantially more capable aircraft, or at least more F-5E aircraft with a sufficient stock of *Sidewinders* to effectively challenge the PRC in air-to-air combat over the Strait. Since both models of the FX aircraft are all-weather fighters, however, and can carry the same number of AAMs as the F-5, either aircraft would enhance Taiwan's ability to defend the airspace over the Taiwan Strait.

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<sup>12</sup> Whether the PRC is currently producing the F-6bis at its Nanchang facility is uncertain and there is speculation that the aircraft has failed in performance tests. (*The Chinese War Machine*, op. cit., p. 138.)

Taiwan's request for improved fighter aircraft, however, is not based on the threat of a naval blockade, but on the worst-case scenario of amphibious invasion of the island. Briefly, this scenario presents a PRC strategy of damaging Taiwan's Air Force in air-to-air combat and aerial bombardment of Taiwan's airfields; neutralizing the Navy through aerial and submarine attack; crippling Taiwan's industry, located along the west coast of the island, through aerial bombardment; and then launching an invasion by amphibious assault. U.S. analysts to date have discounted the threat of invasion as beyond PRC capabilities at this time, primarily due to the large commitment of force necessary for such a project and China's continuing need to defend its northern border, from which troops and equipment cannot be spared without confidence that the Soviet Union will not take advantage of the situation and move its forces into China. Furthermore, an amphibious assault against Taiwan would be a difficult and costly venture. The PRC has approximately 50 landing ships--composed of 15 former U.S. LSTs, some domestically reproduced LST-1s, 13 LSMs, and 16 infantry landing ships--plus about 450 smaller landing craft. The ships are capable of transporting the PRC's Type 60 and 63 amphibious tanks, of which 600 exist armed with 85mm guns. Approximately 250,000 troops could be moved across the Strait aboard the ships and smaller landing vessels.<sup>13</sup> They would encounter about the same number of defending troops equipped with medium and light tanks, SSMs of the *Honest John* and domestically-produced *Hsiung Feng* varieties, with ranges of 5 to 23 miles, and precision-guided munitions such as the TOW anti-tank weapon. The attrition of Taiwan's forces and armament, without foreign resupply or armed assistance, however, would make victory by the PRC possible. Therefore, assuming that at some time within this decade the PRC Government will decide it can commit the forces necessary to launch an invasion of

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<sup>13</sup> Edwin K. Snyder, A. James Gregor, and Maria Hsia Chang, *The Taiwan Relations Act and the Defense of the Republic of China* (Berkeley: Institute of International Studies, University of California, 1980), p. 30. The authors note that during World War II, Allied forces estimated that 300,000 troops would be needed for a successful invasion of Taiwan, then under Japanese control.

Taiwan, the initial phase of this scenario--air-to-air combat and aerial bombardment of Taiwan's airfields--will be studied to determine Taiwan's current ability to defend the airspace over the Strait.

In such a conflict, the same number and type of aircraft would be available to Taiwan. To damage Taiwan's airfields and aircraft on the ground, the PRC would likely commit approximately one-third of its bomber force: 30 B-6 (Tu-16 *Badger*) medium bombers and 150 B-5 (IL-28) light bombers.<sup>14</sup> The airfields would be protected by 80 *Nike-Hercules* and *Hawk* SAMs, 20 *Chaparral* SAMs,<sup>15</sup> 280 improved *Hawk* SAMs,<sup>16</sup> and anti-aircraft guns deployed among Taiwan's fourteen military and joint military and civil air bases (please see Map III, p. 16). Twelve additional airstrips--civil airports and highway strips deemed structurally suitable for airplane takeoff--could be used by Taiwan's fighters, but these would be protected only by anti-aircraft guns. Those aircraft still on the ground would be vulnerable to PRC bombers which came through or avoided the ground-to-air defense since they are shielded only by concrete revetments.<sup>17</sup> The PRC bombers would be escorted by squadrons of fighters, numbering at least as many as those which would be used to defend a naval blockade. The quantity of fighter aircraft the PRC would commit to escort the bombers and to engage in air-to-air combat with Taiwan's fighters would probably be at least one-third of the total aircraft available: 70 F-2s (MiG-15s), 500 to 700 F-4s (MiG-17s), 500 F-6s (MiG-19s), 70 F-6bis (MiG-19 derivative), and 30 F-7s (MiG-21s). Again matching the comparable aircraft--those in Taiwan's F-5 series against those in the PRC's F-6 series--the PRC would enjoy a fleet-size advantage of 570 to 264 aircraft, or 2.16 to 1. Even with the performance superiority of the F-5s over the F-6s, and possibly over the F-6bis, and better pilot training, Taiwan's fighters would be significantly

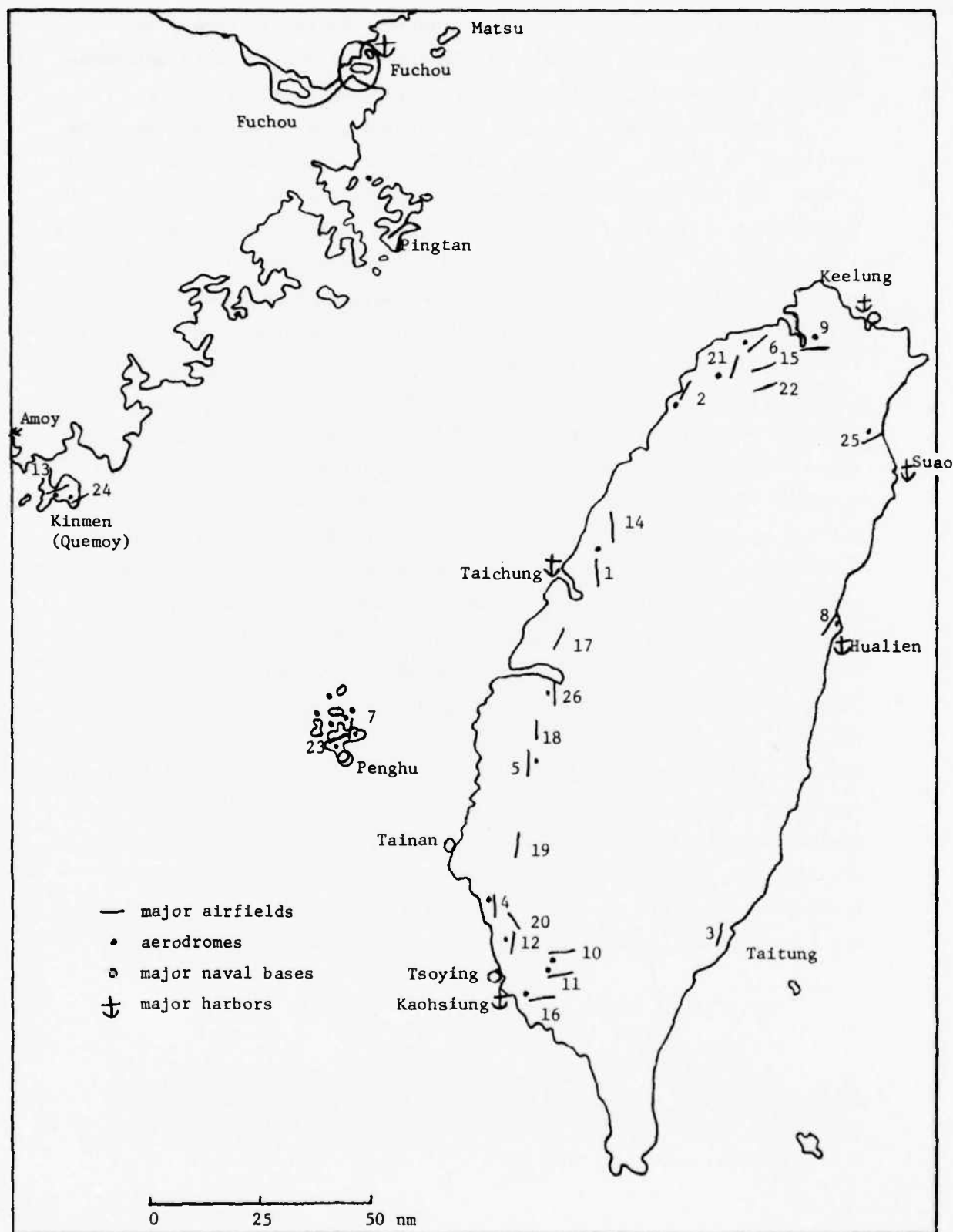
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<sup>14</sup>*The Military Balance 1980-1981*, op. cit., p. 63.

<sup>15</sup>*Ibid.*, p. 67.

<sup>16</sup>Liu Yueh-yun, "The Modernization of the Republic of China's National Defense" (*Chung-hua min-kuo chih kuo-fang chien tai-hua*), *Issues and Studies (Wen-ti yen-chiu)*, Vol. XX, No. 11, August 1981, p. 2.

<sup>17</sup>Clough, op. cit., p. 112.



MAP III: TAIWAN'S MAJOR AIRFIELDS AND NAVAL BASES

|    | AIRFIELDS              | TYPE           | RUNWAY<br>LENGTH<br>(feet) | RUNWAY<br>SURFACE |
|----|------------------------|----------------|----------------------------|-------------------|
| 1  | Ching Chuan Kang AB    | Military       | 12,000                     | concrete          |
| 2  | Hsinchu                | Military       | 12,000                     | concrete          |
| 3  | Chih Hong              | Military       | 10,924                     | concrete          |
| 4  | Tainan                 | Civil/Military | 10,007                     | concrete          |
| 5  | Chiayi                 | Military       | 10,006                     | concrete          |
| 6  | Taoyuan                | Military       | 10,004                     | concrete          |
| 7  | Makung AB              | Civil/Military | 9,840                      | concrete          |
| 8  | Hualien                | Civil/Military | 9,022                      | concrete          |
| 9  | Sungshan (Taipei)      | Civil/Military | 8,530                      | concrete          |
| 10 | Pingtung North         | Military       | 8,000                      | concrete          |
| 11 | Pingtung South         | Military       | 7,817                      | concrete          |
| 12 | Kangshan               | Military       | 7,546                      | concrete          |
| 13 | Shatou                 | Military       | 7,400                      | asphalt           |
| 14 | Taichung               | Military       | 5,300                      | asphalt           |
| 15 | Chiang Kai-shek Int'l. | Civil          | 12,008                     | concrete          |
| 16 | Kaohsiung Int'l.       | Civil          | 10,006                     | concrete          |
| 17 | Highway Strip 206      | Few Facilities | 10,000                     | concrete          |
| 18 | Hwy Strip 260          | Few Facilities | 10,000                     | concrete          |
| 19 | Hwy Strip 296/298      | Few Facilities | 10,000                     | concrete          |
| 20 | Hwy Strip 331/334      | Few Facilities | 9,000                      | concrete          |
| 21 | Hwy Strip 58/60        | Few Facilities | 8,300                      | concrete          |
| 22 | Pa Kuei                | Few Facilities | 8,000                      | concrete          |
| 23 | P'eng Hu               | Few Facilities | 6,500                      | asphalt           |
| 24 | Chinmen (Quemoy)       | Few Facilities | 5,200                      | gravel            |
| 25 | Ilan                   | Few Facilities | 5,200                      | concrete          |
| 26 | Hu Wei                 | Few Facilities | 5,000                      | grass             |

(Based upon: Excerpts from Airplane, Seaplane Stations of the World, published by the Defense Mapping Agency, 1981.)

outnumbered. Including all types of aircraft likely to be deployed, the PRC's numerical advantage rises to 1370 aircraft versus 417, or 3.3 to 1.

If all Taiwan's aircraft survive the initial bombardment of the airfields and are equipped with the maximum load of *Sidewinder* AAMs, Taiwan holds an armament advantage of 2376 AAMs to 1140 AAMs on China's side, or approximately 2 to 1. An air-to-air missile advantage of this magnitude may be more significant than China's fleet-size advantage of 3.3 to 1. However, the quantity of AAMs in Taiwan's inventory is uncertain and the number of fighter aircraft likely to be caught on the airfields during bombardment is unknown.<sup>18</sup> Given the possibility of the PRC deploying aircraft of such types and quantities against Taiwan's Air Force, it may be possible for China to establish air superiority over the Strait of Taiwan. Facing the PRC fighter force described above, increased numbers of F-5Es, equipped with six *Sidewinder* AAMs each, may provide sufficiently for the air defense of Taiwan. For example, if it could be determined, based upon the quality-quantity tradeoff, that Taiwan should have an armament advantage of 3.3 to 1 to offset China's equivalent fleet-size ratio, then Taiwan would have to buy or coproduce an additional 231 F-5Es and equip each of them with the maximum load of six *Sidewinder* AAMs. However, if the PRC enlarges its inventory of high performance aircraft, Taiwan may need advanced all-weather fighter aircraft with better performance capability than even an increased stock of F-5Es can provide.

Considering the two possible combat missions, as described above, in which Taiwan's Air Force might be engaged should the PRC decide to reunify the island province with the rest of China by force, the need for improved fighter aircraft at this time has not been conclusively proved, but cannot be dismissed for the future. Although Taiwan's current inventory of F-5s is probably sufficient to counter the support

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<sup>18</sup>Taiwan's fighter units are kept on five-minute combat alert status which shifts to two-minute cockpit alert on orders from the Combat Air Command. (Donald E. Fink, "Nationalists Update Fighter Force," *Aviation Week & Space Technology*, May 29, 1978, p. 16.)



aircraft which would accompany a PRC naval blockade of the island, this quality-over-quantity superiority may not last much longer. China's aircraft industry reportedly produces about 300 aircraft of all types per year<sup>19</sup> and it is developing fighter aircraft which will outperform the F-5E. Should the PRC leadership conclude that reunification is worth the costs and the risks involved in a full-scale invasion, particularly if more F-6bis and F-7 aircraft are added to the inventory and deployed in southeastern China, an improved fighter may be necessary for the defense of Taiwan.

The likelihood of either action being taken by China remains questionable. Since recognition of the PRC Government by the United States, China has made several peaceful overtures to Taiwan, such as the proposal in January 1979 to establish open trade, postal services, and transportation between the Mainland and Taiwan. Most recently on National Day (October 1), 1981, Marshal Yeh Chien-ying, Chairman of the Standing Committee of the National People's Congress, proposed that negotiations for reunification begin and accompanied this offer with promises that Taiwan could retain its armed forces and its socioeconomic system. The threat of military action has not been abandoned, however. In January 1980, Vice Premier Teng Hsiao-ping delivered a speech to high-ranking Communist Party cadres "Concerning the Current Situation and Tasks" of the PRC. The second of three main tasks was the return of Taiwan "to the motherland."<sup>20</sup> Chinese leaders have also expressed the intention that the PRC would seek peaceful reunification *unless* Taiwan refused indefinitely to enter into negotiations, developed relations with the Soviet Union, or declared Taiwan to be an independent state. The use of force against Taiwan, therefore, remains a possibility as does the need for FX aircraft. For now, Taiwan's Air Force seems to be sufficiently strong to deter the PRC from attempting to take over the island.

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<sup>19</sup> Snyder et al., op. cit., p. 34.

<sup>20</sup> Foreign Broadcast Information Service, *People's Republic of China*, February 12, 1980, p. U3 (Chao Tung, "Improve Leadership and Act as Good Examples," *Wen Wei Po*, February 6, 1980.)

by force; however, within the next ten years this balance may change as the PRC produces additional F-6bis and F-7 aircraft and, perhaps with Western technical assistance, completes development of its F-12 prototype. Furthermore, should the Nationalist Government on Taiwan decide to enter into reunification talks with the PRC, its bargaining position would be enhanced by greater military potential and thus, contrary to Chinese assertions that Taiwan would become more intransigent, ownership of improved fighter aircraft might make Taiwan more willing to negotiate a peaceful reunification with China. For example, if Taiwan's leaders came to believe that a power-sharing scheme of the sort suggested by Yeh Chien-ying was feasible and desirable, based on patriotic sentiment, they would probably regard a defense force, including advanced fighter aircraft, which was capable of deterring attack as a means of guaranteeing the autonomy offered in Yeh's proposal. Reunification negotiations now seem unlikely; however, as the leadership on both sides of the Taiwan Strait changes with time, more flexible attitudes may become apparent. Also, the U.S. Government might choose to link the sale of FX fighter aircraft to assurances from Taiwan that the Nationalist Government would then be willing to begin discussions with the PRC leadership. In the 1972 Shanghai Communique and again in the 1978 announcement of the establishment of diplomatic relations, the U.S. "acknowledge[d] the Chinese position that there is but one China and Taiwan is part of China" and, furthermore, "continue[d] to have an interest in the peaceful resolution of the Taiwan issue."<sup>21</sup> Through aides, President Reagan has expressed his willingness to serve as mediator in bringing China and Taiwan to the negotiating table. If Taiwan were willing to accept the improved fighters on the terms of initiating talks with the PRC--for instance, if Taiwan viewed its Air Force with the additional aircraft as adequate to guarantee autonomy within a reunified China--and if this explicit linkage sufficed to mollify China enough to muffle its protest against the U.S. arming of Taiwan, the sale of FX

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<sup>21</sup>"Text of Carter Speech on China," *Los Angeles Times*, December 16, 1978, p. 22.

aircraft under this condition might be the initial mediatory step. This is a highly speculative suggestion fraught with what now seem to be political impossibilities: Taiwan's acceptance of the linkage of sales to negotiations, China's acquiescence to the sale on any grounds, and no American outcry charging the government with selling Taiwan to the Communists. This is not to say that the FX sale on these terms could not take place at a later time in a different political climate. Based on the premise that some version of the FX aircraft could be deemed necessary and authorized for sale to Taiwan at some time in the future, the F-5G and the F-16/J79 will be compared in the following section to determine which aircraft better suits Taiwan's defense needs.

### III. A COMPARISON OF THE F-5G AND THE F-16/J79

If the U.S. Government decides in the future to sell improved fighter aircraft to Taiwan, consideration will turn to which FX aircraft to authorize: Northrop's F-5G or General Dynamics' F-16/J79. In this section, the two aircraft will be compared on the basis of performance in relation to the mission needs of the Chinese on Taiwan and of the cost to the Nationalist Government.

Each of the aircraft is designed to meet the guidelines for the FX aircraft as designated by President Carter on January 4, 1980:

intermediate fighter aircraft developed or modified for export...whose cost and performance characteristics would generally lie between our current export fighter, the F-5E, and fighter aircraft now in production for U.S. forces, such as the F-16.<sup>1</sup>

The Northrop Corporation's F-5G is a follow-on to the F-5 International Fighter Aircraft production series and is distinguished by its single General Electric F404 turbofan engine which replaces the two General Electric J85 turbojet engines powering the F-5E. This new engine increases total thrust by 60 percent, although this is slightly degraded by the addition of 1537 pounds to the weight of the aircraft, and it improves the aircraft's performance in take-off, acceleration, and maneuverability. General Dynamics' F-16/J79 is a derivative of the F-16 fighter produced for the U.S. Air Force. Although the avionics package remains the same, subject to approval of the U.S. Government on a case-by-case basis before export, the Pratt and Whitney F100 engine which powers the F-16A, has been replaced with the General Electric J79 turbojet. Use of the J79 engine reduces thrust by more than 20 percent and the engine, plus slight modifications in the airframe, produce a gain in weight of more than 10 percent. In Chart III (p. 23), a comparison of the dimensions, equipment, and performance capabilities of the two aircraft is given.

The reliability and performance capability of the engines of both aircraft have been well-proved in other fighter aircraft. The F-5G's

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<sup>1</sup>"Export of Fighter Aircraft," *Department of State Bulletin* (March 1980), p. 64.

CHART III

COMPARISON OF THE F-5G AND THE F-16/J79

|   | F-5G  | F-16/J79  |
|---|---|---|
| Span  | 26.6 feet   | 32.83 feet  |
| Length  | 48.5 feet   | 49.52 feet  |
| Wing area (gross)   | 186 feet <sup>2</sup>   | 300 feet <sup>2</sup>   |
| Empty weight  | 11,220 lbs.   | 16,844 lbs.   |
| Combat take-off weight<br>(air-to-air)                        | 17,110 lbs.   | 25,426 lbs.   |
| Air combat weight<br>(half full)                              | 14,880 lbs.   | 21,950 lbs.   |
| Max. gross weight   | 26,140 lbs.   | 35,400 lbs.   |
| Internal fuel capacity  | 4,440 lbs.  | 6,972 lbs.  |
| Max. external load  | —   | 15,200 lbs.   |
| Dry thrust  | 10,000 lbs.   | 11,810 lbs.   |
| Reheated thrust   | 16,000 lbs.   | 18,730 lbs.   |
| Thrust-to-weight ratio<br>with afterburner<br>(combat weight) | 1.07  | ~.85  |
| Wing loading at combat weight<br>(maximum)                    | 92 lb/ft <sup>2</sup><br>140 lb/ft <sup>2</sup>   | 73 lb/ft <sup>2</sup><br>118 lb/ft <sup>2</sup>   |
| Max. Mach number  | 2.0   | 2.0+  |
| Instantaneous turn rate<br>(15,000 ft. M = 0.8)               | 19.3°/sec   | 19.1°/sec   |
| Sustained turn rate<br>(15,000 ft. M = 0.8)                   | 11°/sec   | 11.7°/sec   |
| Engine  | 1 General Electric<br>F404 turbofan   | 1 General Electric<br>J79 turbojet  |
| Avionics  | General Electric<br>multimode coherent<br>radar   | Westinghouse<br>APG-66 radar  |
| Basic Armament  | 2 AIM-9 Sidewinder<br>AAMs<br>2 20mm M-39 cannon<br>up to 4 additional<br>AAMs on underwing<br>pylons | 2 AIM-9 Sidewinder<br>AAMs<br>1 20mm M-61 cannon<br>up to 4 additional<br>AAMs on underwing<br>pylons |
| Relative Flyaway Cost<br>(1980 dollars)                       | \$5 million   | \$6 million   |

GE F404 is the engine found on the U.S. Navy's F-18 *Hornet*, a pair of which are used to power that fighter. The J79 engine on the modified F-16 is highly similar to the GE J79-17C, with more than 90 percent of its parts in common, which is installed in the F-104 *Starfighters* and F-4 *Phantoms*. Since Taiwan's Air Force already has 63 F-104s in its inventory and is familiar with its maintenance, engine commonality is one factor in favor of the sale of the F-16/J79 to Taiwan. However, several characteristics of the F404 engine tip the balance toward the F-5G as the more desirable aircraft: maintenance of the F404 should be an easier, faster, and less expensive task since it has 7,700 fewer parts than the J79; turbofan engines are more fuel efficient than turbojets, an important consideration for Taiwan which imports all of its oil; and the thrust-to-weight ratio of 1.07 produced by the F404 indicates an edge in take-off performance over the F-16/J79 with a ratio of approximately .85.

The equipment of the two aircraft seem comparable. The avionics packages--the General Electric multimode coherent radar on the F-5G, upgraded from the Emerson radar on the F-5E, and the Westinghouse APG-66 radar on the F-16/J79, also found on the F-16A--can prepare each aircraft for various air-to-air, air-to-sea, and air-to-ground missions. Both aircraft are armed with two AIM-9 *Sidewinder* AAMs, 20mm cannons, and a comparable assortment of mixed ordnance.

Comparing maximum Mach numbers and turn rates, the F-5G and the F-16/J79 appear to be similar in performance capability during air-to-air combat. This judgment is borne out by contrasting the mission profiles of the two aircraft, when carrying the same amount of fuel and weapons and performing similar maneuvers. The F-5G slightly outperforms the F-16/J79 in the Combat Air Patrol Mission, while the F-16/J79 is the superior aircraft in protecting ground troops in the Close Air Support Mission. Due to its lighter weight and higher thrust-to-weight ratio, the F-5G would probably also prove to be the better aircraft in the High Speed Intercept Mission. Although the two fighters are fairly evenly matched, for the air-to-air combat mission against the PRC's F-6bis and F-7s, the F-5G may be the slightly better choice for Taiwan.

In terms of cost, the F-5G also has an advantage over the F-16/J79.

The flyaway costs of the two aircraft differ by just one million dollars; in 1980 dollars, the F-5G has a flyaway cost of \$5 million, while that of the F-16/J79 is \$6 million. The actual acquisition costs would run much higher: the proposed total program cost of 24 F-16/J79s, including spares, ground equipment, training, and documentation, quoted in 1980 dollars to Austria was approximately \$380 million, or \$15.83 million per airplane.<sup>2</sup> When total acquisition costs are determined, the relative difference between the cost of the F-5G and that of the F-16/J79 might differ by much more than one million dollars. Furthermore, since Taiwan's Aero Industrial Development Center already has a coproduction contract with Northrop through a foreign military sales (FMS) agreement, a similar arrangement might be made for coproduction of the F-5G. Some retooling at the AIDC plant would be necessary to accommodate the structural changes in the F-5 airframe, predominantly in the fuselage areas to allow for the change from two engines to a single engine and the accompanying readjustment of the airplane's center of gravity. The AIDC facility, however, has had experience making extensive modifications of F-5Es in Taiwan's inventory and the costs of retooling would probably be low enough to make coproduction financially feasible.

Based upon the above analysis of performance capability and cost, the better FX aircraft for Taiwan would probably be Northrop's F-5G. In air-to-air combat against the advanced fighters of the PRC Air Force, the F-5G would be slightly superior to the F-16/J79 in maneuverability and would match the F-16/J79 in other performance measures. Furthermore, the F-5G would probably be cheaper to purchase, or coproduce, than the F-16/J79. Although the F-16/J79 has several advantages over the F-5G--better performance in the Close Air Support Mission and a development and production schedule which promises delivery of the F-16/J79 aircraft at least six months ahead of the F-5G in 1983--the F-5G is slightly more suited to the defense needs of Taiwan and is more affordable.

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<sup>2</sup>Charles Gilson and Mark Lambert, "The New American Export Fighters," *Interavia* (12.1980), p. 1166.

#### IV. CHINA'S RESPONSE

To this discussion of the merits of the sale of FX aircraft, or additional F-5E airplanes to Taiwan, must be added the political ramifications of such a decision. The American commitment to Taiwan is outlined in the 1979 Taiwan Relations Act which not only empowers the U.S. Government to sell any military equipment deemed "necessary to enable Taiwan to maintain a sufficient self-defense capability," but also specifies the responsibility of the President and Congress to be able to "determine the nature and quantity of such defense articles and services based solely upon their judgment of the needs of Taiwan."<sup>1</sup> During the 1970s, the U.S. led Taiwan to believe that advanced fighter aircraft would be provided after expiration of the coproduction arrangement with Northrop in 1983. As a candidate in 1980, President Reagan encouraged this expectation with vows to upgrade America's unofficial relationship with Taiwan and, until late December 1981, he seemed prepared to authorize the sale of the F-5G. In this light, the decision not to sell any version of the FX aircraft, but to continue coproduction of the F-5E beyond 1983, can be viewed as capitulation to China's objection to the sale.

Since diplomatic relations were established in January 1979, the Chinese leadership has repeatedly voiced its opposition to any further arms sales to Taiwan by the United States and has objected specifically to the sale of improved fighter aircraft. Hints that the consequence of such a sale would be the downgrading, or even severing, of diplomatic relations with the U.S. have been delivered through *People's Daily* editorials and American officials visiting Peking. Similar threats were actualized in early 1981 when the Government of the Netherlands authorized the sale of two diesel-electric submarines to Taiwan and the PRC responded by downgrading relations from the ambassadorial to the charge d'affaires level.

That this action was meant in part to be a warning to the U.S. that a similar degradation of the Sino-American relationship was

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<sup>1</sup>Public Law 96-8, *Taiwan Relations Act* Section 3(a) and (b).



possible should the U.S. continue to sell arms, especially advanced fighters, to Taiwan was obvious. Vague suggestions of a compromise concerning a future sale of FX aircraft, however, were made in late 1981. Following Foreign Minister Huang Hua's visit to Washington, D.C. in November, the American press reported that in exchange for the U.S. setting a cutoff date for arms sales to Taiwan and limiting the types of weapons to be sold prior to that date, China might allow the sale of FX aircraft to pass without damaging U.S.-PRC relations. In speaking before the Washington Press Club on December 16, Ambassador Chai Tse-min stated that Peking's response to any American arms agreement with Taiwan would "be determined by the circumstances, in light of the nature and amount of sales."<sup>2</sup> This flexible attitude was repeated in a *People's Daily* commentary following the announcement on December 28 that the Reagan Administration had approved the sale of \$97 million-worth of spare parts for aircraft to Taiwan. After stating China's opposition to the sale, the commentary continued: "A fundamental principle must be established first of all. That is, the United States must adhere to the norms governing international relations and the Sino-American communique establishing diplomatic relations and truly respect China's sovereignty, not interfere in its internal affairs and not sell weapons to Taiwan. Once this principle is established and recognized, the two sides may negotiate ways and means of settling this issue."<sup>3</sup>

Respect for China's national sovereignty is at the heart of this issue in the judgment of its leadership. America's national sovereignty is likewise an important consideration for the U.S. decision-makers. In articles and editorials prior to the January 11 announcement by the Administration, American commentators took note of President Reagan's declaration that "it is not the business of other nations to make American foreign policy"--a comment aimed at Israel when it voiced

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<sup>2</sup>Ambassador Chai's remarks quoted by Robert C. Toth, "Peking Envoy Appears to Soften Stand Against U.S. Arms for Taiwan," *Los Angeles Times* (December 17, 1981).

<sup>3</sup>*People's Daily* commentary, December 31, 1981, quoted by Michael Parks, "China Hints at Taiwan Arms Compromise," *Los Angeles Times* (January 1, 1982), p. 7.

opposition to the sale of AWACS airplanes to Saudi Arabia--and applied the principle to the FX aircraft decision.<sup>4</sup> To reconcile China's attitude that settlement of Taiwan's reunification with the Mainland is an internal matter with the American commitment to a former ally, which the United States still considers a friend, is no easy task. Adding to the delicacy of this situation are the current Administration's hopes of developing a strategic partnership with China to counter the shared threat from the Soviet Union. That President Reagan made the decision not to sell improved fighter aircraft to Taiwan on the basis of this political consideration rather than "solely upon [his] judgment of the needs of Taiwan" can reasonably be asserted. An inter-agency intelligence study of Taiwan's defense needs, completed in October 1981, advised against the sale of advanced aircraft; however, this recommendation evidently did not sway the President from his earlier judgment that some version of the FX aircraft ought to be sold to Taiwan since there were reports through December that he was leaning toward authorizing the sale of Northrop's F-5G fighter. China's reluctance to condemn the Soviet Union for its role in the declaration of martial law in Poland, based upon Chinese domestic political considerations, but counterposed to its readiness to denounce Soviet acts of "super-power hegemony" in the past, seemingly tipped the balance toward greater concern for PRC response and away from considerations of America's responsibility to Taiwan. The Chinese Government is unlikely to censure either the Soviet Union or the military government of Poland when it is negotiating an internal power balance with the PLA general staff. However, whether China now joins the U.S. protest against the Soviet Union or not, the appearance of the PRC government deciding American foreign policy cannot be ignored.

Now that the U.S. decision has been made, an alternative for Taiwan to settling for additional F-5E airplanes is the sale of advanced

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<sup>4</sup>For example, see Ray S. Cline, "Ronald Reagan and the Taiwan Arms Sale," *Wall Street Journal* (December 21, 1981), p. 20; Robert C. Toth, "U.S.-China Ties Facing Major Test Over Issue of Advanced Warplanes for Taiwan," *Los Angeles Times* (December 13, 1981), pp. 6-7; and "What Taiwan Wants--and Needs," *New York Times* (November 20, 1981).

fighter aircraft by a third country. In recent years, Taiwan has sought to diversify its sources of military equipment; however, for large systems, such as aircraft, Taiwan has preferred to maintain its business with the United States. In addition, pressure from the PRC has deterred most nations from discussing arms procurement with Taiwan. Exceptions are Israel and the Netherlands. In 1973, Israel began delivering *Gabriel* SSMs to Taiwan and, in 1978, the U.S. Government reportedly indicated support for the possible sale of Kfir fighter aircraft. However, since Taiwan is dependent upon Saudi Arabia for its oil supply, it has been reluctant to purchase openly additional equipment from Israel. The Netherlands made the decision in late 1980 to sell Taiwan two submarines, as noted above. Despite the consequent downgrading of its diplomatic relations with the PRC and mixed domestic reaction, the Dutch Parliament upheld the agreement. The Netherlands, Belgium, Norway, and Denmark are coproducing the F-16 fighter, the sophisticated version which Taiwan prefers to the F-5G and the F-16/J79, with General Dynamics under a Memorandum of Understanding (MOU) which calls for European production of "15 percent of the procurement value of all third country F-16 aircraft program purchases."<sup>5</sup> Although a participating European government cannot unilaterally authorize the sale to a third country of F-16 aircraft produced at its facilities because the MOU specifies that these airplanes will be transferred to the U.S. Government upon completion, the United States could perhaps turn responsibility for the aircraft back to the Netherlands--or one of the other three program participants--with the understanding that Taiwan would be the final recipient of the airplanes. Another possibility is the sale of several F-16s by Israel, which has been receiving the aircraft since January 1980, plus technical assistance in initiating development of a comparable aircraft at the Aero Industrial Development Center in Taichung. Until now, Taiwan has depended upon foreign aircraft imports or coproduced models of foreign design, for both its military and civilian inventories; however, disappointment with the

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<sup>5</sup> Comptroller General of the United States, *Sharing the Defense Burden: The Multinational F-16 Aircraft Program* (Report to the Congress, August 15, 1977), p. 6.

American decision may lead to increased self-reliance and further development of its design and production industry. Furthermore, reports of clandestine cooperation among Taiwan, Israel, and South Africa in developing nuclear weapons and delivery systems indicate continued contact between the governments of Taiwan and Israel and the possibility of a fighter-aircraft transfer despite concern for Saudi Arabia's reaction. Any of these aircraft procurement arrangements--sale of the F-16 by a European coproducer or sale of either the F-16 or Kfir fighter by Israel--would distance the transaction from the U.S. Government, but would not completely sever the ties. These possible transfers are ways in which Taiwan might acquire the aircraft its government believes is needed. From the U.S. perspective, however, such sales would likely incur the political price of downgraded or severed relations with the PRC which would probably attribute the decision directly to the U.S. Government.

As this study has shown, technical evidence of Taiwan's need for improved fighter aircraft at this time is inconclusive. Due to better performance capability and avionics than that of the aircraft currently in Taiwan's inventory, the FX fighter would be an asset to the island's air force and could prove necessary to defend the island adequately as China brings more advanced aircraft into service. Increased numbers of F-5Es, as permitted by the U.S. Government's authorization of continued coproduction with the Northrop Corporation, may provide a sufficient deterrent to the use of force by the PRC over the next few years. In preparation for possible air-to-air combat, however, Taiwan should acquire enough *Sidewinder* AAMs to equip its fighter aircraft with the maximum armament load. Perhaps coproduction arrangements for assembly of AAMs at Taiwan's Aero Industrial Development Center could be made with the Raytheon Corporation or Ford Aerospace.

Aside from strictly defense considerations, the wisdom of the U.S. decision not to sell FX aircraft to Taiwan will be tested in political terms. Several indicators can be cited against which to measure whether this was a good political choice. Three of these deal specifically with Sino-American relations, which this action sought to preserve. First, the Chinese Government has already protested the

continued coproduction of F-5E aircraft. It remains to be seen whether any further unfavorable action will be taken or the protest will dissipate. Secondly, even if no disruption of the U.S.-PRC relationship follows, such as the downgrading of relations, it is still questionable whether an anti-Soviet security partnership will develop. There could well be a backlash effect if the PRC interpreted the U.S. decision as evidence of American weakness. China might come to doubt the United States as a reliable partner and hesitate to commit itself to any joint defense arrangements. Thirdly, since the announcement of the Reagan Administration's decision at this particular time indicates linkage with the lack of international support for America's condemnation of the Soviet role in the Polish crisis, another indicator of its soundness will be whether China joins the United States in denouncing the Soviet Union. If not, the value of announcing the choice at this time, rather than continuing to procrastinate, is seriously diminished. Even if the PRC decides to censure the Soviet Union, the U.S. Government has made itself vulnerable to charges of sacrificing Taiwan's needs for possibly shortlived political gain. Lastly, the repercussions of the U.S. decision may extend beyond the U.S.-China-Taiwan triangle. This action reflects poorly upon the U.S. sense of commitment to a friend, as domestic commentators have noted. Other nations, such as Israel, may regard this as cause to doubt the integrity of America's commitment to them. The scope of the benefits or damage which will be wrought by the decision not to sell FX aircraft to Taiwan remains to be seen.

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